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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,680	11/20/2003	Lewis R. Norman	2003-IP-009800U1	8569
7590 Robert A. Kent Halliburton Energy Services 2600 S. 2nd Street Duncan, OK 73536			EXAMINER WHITE, EVERETT NMN	
			ART UNIT 1623	PAPER NUMBER
			MAIL DATE 06/22/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/717,680	<b>Applicant(s)</b> NORMAN ET AL.	
	<b>Examiner</b> Everett White	<b>Art Unit</b> 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The amendment filed April 13, 2007 has been received, entered and carefully considered. The amendment affects the instant application accordingly:

- (A) Claims 8-32 have been canceled;
- (B) Claims 34 have been amended;
- (C) Comments regarding the Office Action have been provided drawn to:
  - (I) 102(b) rejection, which has been withdrawn;
  - (II) 103(a) rejection, which has been maintained for the reasons of record.

2. Claims 1-7, 33 and 34 are pending in the case.

3. The indicated allowability of Claims 33 and 34 is withdrawn in view of the newly discovered reference to McCulloch et al (US Pat No. 5,888,927). Rejections based on the newly cited reference follow.

### ***Claim Rejections - 35 USC § 103***

4. Claims 1-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al (US Patent No. 5,002,125) for the reasons disclosed on pages 3-5 of the Office Action filed December 15, 2006.

5. Applicant's arguments filed April 13, 2007 have been fully considered but they are not persuasive. Applicants argue against the rejection on the ground that the Phillips et al patent does not disclose the step of "derivatizing a polysaccharide with a metal coordinating group to produce a derivatized polysaccharide having bidentate ligands," as recited in instant Claim 1. The differences between the process disclosed in the instant claims and the process described in the Phillips et al patent appear only to be in how the authors have chosen to provide descriptions of substantially the same process. While the instant claims provide more detail of the steps used carry out the instantly claimed process that involves derivatizing the polysaccharide and crosslinking the derivatized polysaccharide, the Phillips et al chose to describe the procedure as a crosslinking process, wherein derivatization of the polysaccharide is inherently included in the crosslinking procedure. Just as disclosed in the instant Claims, the Phillips et al

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patent discloses closely similar, if not identical, polysaccharides, metal coordinating groups, bidentate ligands and crosslinking agents used to carry out the process thereof. There is no indication in the Phillips et al patent that the final product thereof is different from the metal ion crosslinked polysaccharide obtained in the process of the instant claims. Accordingly, the rejection of Claims 1-7 under 35 U.S.C. 103(a) as being unpatentable over the Phillips et al patent is maintained for the reasons of record.

6. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al (US Patent No. 5,002,125) as applied to Claims 1-7 above, and further in view of McCulloch et al (US Patent No. 5,888,927).

Applicants claim the method of Claim 1 wherein the bidentate ligands comprise 2,2'-bipyridine.

The Phillips et al patent discloses polymers useful in the formation of stable fracturing fluid, which include polysaccharides and polysaccharide derivatives, wherein guar, hydroxypropyl guar, hydroxyethyl guar, cellulose and its derivatives, and xanthan are set forth as examples (see column 9, last paragraph and column 10, lines 1 and 2). The Phillips et al patent discloses cross-linking agents in combination with solutions of polymeric thickening agents, which include multivalent metal ions, wherein iron is listed as an example of a multivalent metal ion that may be used in the combination. Phillips et al discloses that the combination of cross-linking agents and polymers include admixing guar and its derivatives as a polymer with a cross-linking agent, wherein compounds suitable for use as crosslinking agents include acetylacetonate ions -in the form of titanium acetylacetonate (see column 10, 2<sup>nd</sup> full paragraph). The Phillips et al patent discloses that titanium acetylacetonate is an effective agent for hydroxypropyl guar or carboxymethyl hydroxypropyl cellulose (see column 10, lines 28-30). The guar, hydroxypropyl guar and hydroxyethyl guar of the Phillips et al patent anticipate the guar, hydroxy ethyl and hydroxyl propyl derivatives of gums in instant Claim 2. The iron disclosed in column 10, line 14 of the Phillips et al patent embraces the iron disclosed in instant Claims 3 and 7, and the titanium acetylacetonate disclosed in the Phillips et al patent at line 26 of column 10 embraces the acetylacetonate ions disclosed in instant

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Claim 4. Also, see column 3, lines 61-64 of the Phillips et al patent wherein it is disclosed that the fracturing fluid thereof is introduced into a well and displaced from the wellhead down the well to the vicinity of the subterranean formation, which embraces the subject matter of instant Claim 6.

The instantly claimed method of crosslinking a polysaccharide of Claims 33 and 34 differs from the information disclosed in the Phillips et al by claiming that the bidentate ligands comprise 2,2'-bipyridine.

However, the McCulloch et al patent, which discloses mineralizing agents being used to partially dissolve silica, shows that the substitution of the acetylacetonate disclosed in the Phillips et al patent with 2,2'-bipyridine is well known in the art. See column 4, lines 50-57 of the McCulloch et al patent, wherein the mineralizing agents thereof include organic complexing agent that may be selected as acetylacetonate and 2,2'-bipyridine as well as ethylenediamine, which is also disclosed in instant Claim 4 as a bidentate ligand.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time Applicants invention was made to substitute the acetylacetonate used in the process for crosslinking polysaccharides in the Phillips et al patent with 2,2'-bipyridine in view of the recognition in the art, as suggested by the McCulloch et al patent, that 2,2'-bipyridine is an effective substitute for acetylacetonate for use as a complexing agent in the silica arts.

One of ordinary skill in this art would combine the teaching of the Phillips et al patent with the teaching of the McCulloch et al patent since both patents disclose procedures that involve the use of complexing agents to carry out their processes.

### ***Summary***

7. Claims 1-7, 33 and 34 are rejected.

***Examiner's Telephone Number, Fax Number, and Other Information***

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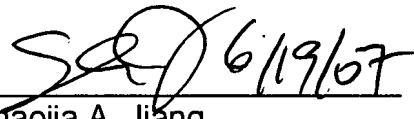
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is 571-272-0660. The examiner can normally be reached on 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-066127. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



E. White



Shaojia A. Jiang  
Supervisory Primary Examiner  
Technology Center 1600